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| **Repeating Patterns**  \*Lesson is adapted from activities in *ThinkMath!,* Harcourt School Publishers, 2008. |
| **Mathematics, Kindergarten** |
| **Materials:**   * Objects for making patterns: pattern blocks, counters, connecting cubes, etc |
| **TEKS/SEs:**   * K.5 – The student is expected to identify, extend, and create patterns of sounds, physical movement, and concrete objects. * K.6A – use patterns to predict what comes next, including cause-and-effect relationships   **Objective 6 TEKS/SEs (Underlying Processes and Mathematical Tools):**   * K.13A – identify the mathematics in everyday situations * K.13B – solve problems that incorporate understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness * K.13C – select or develop an appropriate problem-solving strategy including drawing a picture, looking for a pattern, systematic guessing and checking, or acting it out in order to solve a problem * K.13D – use tools such as real objects, manipulatives, and technology to solve problems * K.14A – communicate mathematical ideas using objects, words, pictures, numbers, and technology * K.14B – relate everyday language to mathematical language and symbols * K.15 – use logical reasoning; justify thinking using objects, words, pictures, numbers, and technology |
| **Lesson objective(s):**   * + Students will :     - Predict what comes next in a pattern     - Create patterns of the same type with different material |
| **Differentiation strategies to meet diverse learner needs:**   * Problem- solving, inquiry-approach * Hands-on exploration * Collaboration and discussion |
| **ENGAGEMENT**   * Using a secret pattern rule, start a pattern using sound and physical movement. For example, clap twice and stomp. Repeat three times. * Ask students to predict which action comes next and explain their predictions. Most likely, students will mention the word *pattern*. * Emphasize that noticing patterns is important because it helps us predict what comes next. * Continue making patterns using sounds, movements, objects, or numbers, and asking students to predict what comes next. Encourage students to use the words *before, after, next, first, second, and third* when describing patterns. * Suggestions:   + AaAaAa . . .   + Triangle, square, square, triangle, square, square . . .   + Low tone, two high tones, low tone, two high tones . . .   + Clap, pause, clap, clap, pause, clap . . . |
| **EXPLORATION**  **Part 1**:   * Begin introducing patterns with more than 2 parts in the pattern unit. * For example: ABCABCABC; ⬜ ⬜ ⏹ ⬜ ⏹ ΔΔ ⏹ ⬜ ⬜ ⏹ ⬜ ⏹ Δ . . . * Ask students to tell you when the patterns starts to repeat. Indicate the first part – “Has the pattern started to repeat?” Then indicate the next part and ask the same question, etc., until students find the place where the pattern starts to repeat. * Ask students to extend each pattern.   **Part 2**:   * Ask students to create their own patterns and explain their patterns to their classmates. |
| **EXPLANATION**   * Students will explain their thinking and justify their solutions in groups and in whole-class discussion, as well as with drawings, diagrams, and oral explanations. |
| **ELABORATION**   * Draw a pattern or construct a pattern with objects, such as pattern blocks. Challenge students to create a similar pattern using different objects. * For example, show students an ABC pattern made with pattern blocks. They might make a pattern using counters of three different colors. * Make many different types of objects available so that students make their own decision as to the type of materials they use for their patterns. Ask a volunteer to make the initial pattern and then have another child copy the pattern. |
| **EVALUATION**   * Observe children as they create patterns:   + *Do they create a simple AB pattern, or do they try to create a more complex pattern?*   + *What types of materials do they choose for the Elaboration? Do they simply choose different colors of the same item? Or do they challenge themselves to choose different types of items?* |